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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,449	07/06/2005	Ingmar Grasslin	PHDE030004US	5830
38107	7590	04/04/2006	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS 595 MINER ROAD CLEVELAND, OH 44143			VAUGHN, MEGANN E	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/541,449	Applicant(s) GRASSLIN ET AL.	
	Examiner Megann E. Vaughn	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/6/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/6/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

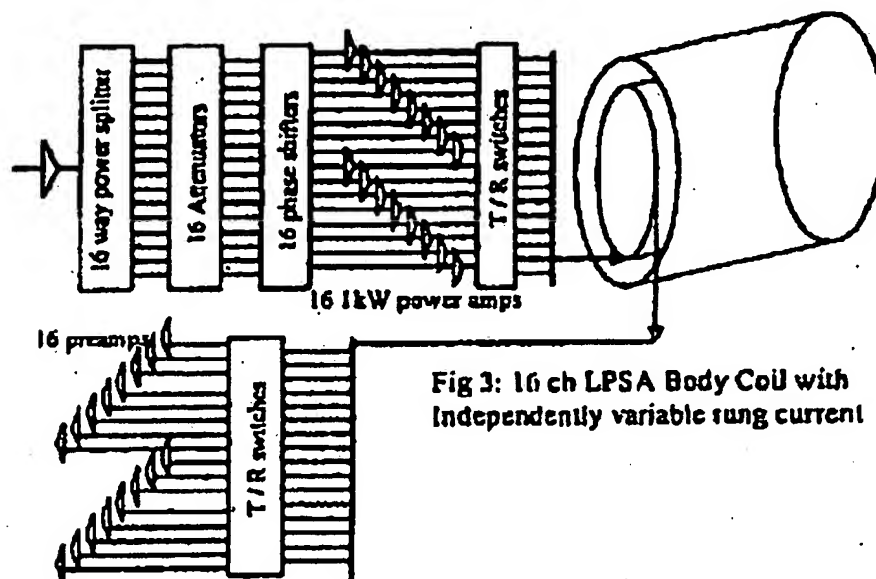
2. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leussler (WO 02/095435) in view of Boskamp (Whole Body LPSCA transceive array with optimized transit homogeneity).

Regarding claim 1, Leussler discloses in figure 1, a high-frequency system for an MR apparatus with a high-frequency coil arrangement comprising a plurality of resonator elements (104), which coil arrangement is coupled to a transmit unit (106), a respective transmit channel (1-8) of the transmit unit (106) that is assigned to the resonator elements (104), wherein the transmit unit (106) comprises a plurality of high-frequency amplifiers (107), and an alternative first controllable multiplexer/distribution network (109).

Leussler does not disclose a second controllable multiplexer/distributor network in which the output signals of the high-frequency amplifiers can be distributed over the transmit channels.

Boskamp discloses in figure 3 shown below, a body coil, including a 16-way power splitter, which act as a first multiplexer/distributor, T/R switch element, that acts

as a second multiplexer/distributor, following the frequency amplifiers. Therefore it would have been obvious to a person having ordinary skill in the art at the time that the invention was made to add a second distributor means as taught by Boskamp to the outputs of the frequency amplifiers, disclosed by Leussler, in order to assure the distribution to corresponding resonant elements.



Regarding claim 2, Leussler discloses in figure 1 a high-frequency system as claimed in claim 1, wherein a control unit (108) is assigned to the transmit unit (106).

Regarding claim 3, Leussler discloses in figure 1 a high-frequency system as claimed in claim 2, wherein the gain factor of each high-frequency amplifier (107) of the transmit unit (106) can be controlled via the control unit (108) (page 8, lines 1-3).

Regarding claim 4, Leussler discloses in figure 1 a high-frequency system as claimed in claim 3, wherein measurement sensors (117), coupled to the control unit

(111), serve for determining the high- frequency field strength generated by means of the individual resonator elements (104) (page 8, lines 23-26).

Regarding claim 5, Leussler discloses in figure 1, a plurality of controllable high-frequency signal generators (108) for generating the low-power transmit signals.

Regarding claim 6, Leussler discloses in figure 1, that the amplitudes and phases of the high-frequency signals supplied to the resonator elements via the transmit channels (1-8) are individually preselectable (page 8, lines 3-4).

Regarding claim 7, Leussler discloses in figure 1, a receive unit (112) with a plurality of receive channels (a-j) assigned to the respective resonator elements (104).

Regarding claim 9, Leussler discloses in figure 1, a MR apparatus with a main field coil for generating a homogeneous, static magnetic field in an examination volume (100), a number of gradient coils (103) for generating magnetic field gradients in the examination volume (100), a high-frequency system for generating high-frequency fields in the examination volume (100) and for acquiring MR signals from the examination volume (100), and with a central control unit (111) for activating the gradient coils (103) and the high-frequency system, and a reconstruction and display unit (115, 116) for processing and displaying the MR signals, wherein the design of the high-frequency system.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leussler (WO 02/095435) in view of Boskamp (Whole Body LPSA transceive array with

optimized transit homogeneity) as applied to claims 1-7 and 9 above, and further in view of Bock et al (US 6549799).

Leussler and Boskamp disclose the high-frequency coil arrangement as discussed above in paragraph 2.

Leussler and Boskamp do not disclose isolators.

Bock et al discloses in figure 1 an MRI apparatus with a plurality of RF transmitter coils with isolators (27, 27', 27'') connected to the output of the high-frequency amplifier (31). Therefore it would have been obvious to a person having ordinary skill in the art at the time that the invention was made to add isolators to the output of the amplifiers disclosed by Leussler and Boskamp in order to provide isolation between any RF power source and receivers, transmitters, and RF coils (column 10, lines 46-48), in order to prevent any unwanted frequency interference that could disturb the final MRI image.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hartman et al (US 6236206) discloses a birdcage coil where a signal is amplified and sent through a multiplexer before transmitted to each leg, Kang (US 5179332) discloses a power splitter/combiner to feed or receive signals from the segments, which are switched on, of the RF coil, Misic (US 6714013) discloses MRI receiver/transmitter coils, Zhu (US 6989673) discloses a method and apparatus for

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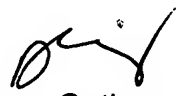
independently controlling transmit coils of a transmit coil array, Wong (6100694) discloses a multiple-tuned bird cage coils, Posner et al (US 6252871) discloses switchable combiner/splitter of high frequency RF signals, and Zou et al (US 6624633) discloses an MRI array coil with a coil multiplexer and switching element preceding the pre-amplifiers.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megann E. Vaughn whose telephone number is 571-272-8927. The examiner can normally be reached on 8 am- 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEV  
Patent Examiner Art Unit 2859  
3/21/2006

  
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